80 per cent air supply. Assumed that $CH_4$ dissociates, that 90 per cent will be burned. $0_2$ available = 32.85X0.8 =26.28.

| 80% Air Supply | Calories | Products of Combustion | | | | | |
|---|---|---|---|---|---|---|---|
| | | $0_2$ | $H_2$ | CO | $C0_2$ | $H_2O$ | $N_2$ |
| $H_2$ 16.60X0.9 = 14.94X58.2 = | 870576 | 7.47 | 1.6 | | | 14. | 29.88 |
| $CH_3$ 5.50 Dissociates $H_2$ 11.0 X0.9= 9.90X58.2 = | 537114 | 4.95 | 6 | | 5.5 | 94 | 19.80 |
| C 5.50 X97.6 = 26.28-17.92=8.36 | 1 | 5.5 17.92 8.3 | | 10.38 | 16.72 3.90 | | 22.00 33.4 |
| CO 27.10 16.72X68.2 = | | | | | | 0.6 | 4 |
| $C0_2$ 3.90 $N_2$ 46.30 | 312 | 26. | 2.7 | 10. | 26. | 25. | 151. |

60 per cent air supply. Assumed that $CH_3$ dissociates, 80 per cent of $H_2$ will be burned. $O_2$ available = 32.85X0.6 = 19.71.

| 60% Air Supply | Calories | Products of Combustion | | | | | |
|---|---|---|---|---|---|---|---|
| | | $0_2$ | $H_2$ | CO | $CO_2$ | $H_2O$ | $N_2$ |
| $H_2$ 16.60X0.8 = 13.28X58.2 = | 773512 | 6.64 | 3. | | | 13. | 26.56 |
| $CH_4$ 5 . 50 Dissociates $H_2$ 11.00X0.8= 8.80X58.2 = | 537 | 4.40 | 32 | | 5 | 28 | 17.60 |
| C 5.50 X97.6 = | | 5.5 16.54 | | 20.76 | 6.34 | 0.60 | 22.00 |
| CO 27.10 19.71-16.54 = 3.17 | 432 | 3.17 | | | 3.90 | | 12.68 |
| 6.34X68.20 = | 225 | 19. | 5. | 20. | 15. | 22. | 125. |

100 per cent air supply, products of combustion: $N_2$ = 177.70

80 per cent air, products of combustion:

$$N_2\text{-fCO-f-}H_2 = 151.42+10.38+2.76 = 164.56.$$

60 per cent air, products of combustion :

$$_2 = 125.14+20.76\text{-h}5.52 = 151.42.$$

The assumption is made that air = l volume $O_2$ and 4 volumes of $N_2$; that 5 volumes of air are required to supply 1 volume $O_2$. This allows for moisture in fuel and air supply.